

WHAT IS CLAIMED IS:

1. A multiple model (MM) radar tracking filter which controls the weighting applied to outputs of first and second model functions responsive to non-Markovian switching logic, comprising:

a feed back loop for providing a feedback signal to respective inputs of the first and second model functions responsive to the weighted outputs of the first and second model functions, wherein the feedback loop provides a feedback signal based on a convex sum of a weighted estimate produced by the MM radar tracking filter.

2. A multiple model (MM) radar tracking filter which controls the weighting applied to outputs of first and second model functions responsive to non-Markovian switching logic, comprising:

a feed back loop for providing a feedback signal to respective inputs of the first and second model functions responsive to the weighted outputs of the first and second model functions, wherein the feedback loop provides a feedback signal based on a convex sum of a weighted estimate and a weighted covariance produced by the MM radar tracking filter.

3. A multiple model (MM) radar tracking filter which controls the weighting applied to outputs of first and second model functions responsive to non-Markovian switching logic, comprising:

the first and second model functions;

switching logic receiving unweighted outputs from the first and second model functions and generating first and second weighting signals;

first and second multipliers generating respective first and second weighted output signals responsive to received ones of the unweighted outputs of the first and second model functions and the first and second weighting signals; and

a feed back loop for providing a feedback signal to respective inputs of the first and second model functions responsive to the weighted outputs of the first and second multipliers, wherein the feedback loop provides a feedback signal based on a convex sum of a weighted estimate produced by the MM radar tracking filter.

4. A multiple model (MM) radar tracking filter which controls the weighting applied to outputs of first and second model functions responsive to non-Markovian switching logic; comprising:

the first and second model functions;

switching logic receiving unweighted outputs from the first and second model functions and generating first and second weighting signals;

first and second multipliers generating respective first and second weighted output signals responsive to received ones of the unweighted outputs of the first and second model functions and the first and second weighting signals; and

a feed back loop for providing a feedback signal to respective inputs of the first and second model functions responsive to the weighted outputs of the first and second multipliers, wherein the feedback loop provides a feedback signal based on a convex sum of a weighted estimate and a weighted covariance produced by the MM radar tracking filter.

5. The MM radar tracking filter as recited in claim 4, wherein the MM radar tracking filter is disposed in a radar system.

6. The MM radar tracking filter as recited in claim 4, wherein the first and second model functions correspond to constant velocity and constant acceleration model functions, respectively.

7. A method for operating a multiple model (MM) radar tracking filter which controls the weighting applied to outputs of first and second model functions responsive to non-Markovian switching logic, comprising:

- generating unweighted outputs from the first and second model functions;
- generating first and second weighting signals responsive to the unweighted outputs from the first and second model functions;
- generating first and second weighted output signals, respectively, in first and second multipliers responsive to received ones of the unweighted outputs of the first and second model functions and the first and second weighting signals; and
- providing a feedback signal to respective inputs of the first and second model functions responsive to the first and second weighted output signals of the first and second multipliers, wherein the feedback signal is based on a convex sum of a weighted estimate.

8. A method for operating a multiple model (MM) radar tracking filter which controls the weighting applied to outputs of first and second model functions responsive to non-Markovian switching logic, comprising:

- generating unweighted outputs from the first and second model functions;
- generating first and second weighting signals responsive to the unweighted outputs from the first and second model functions;
- generating first and second weighted output signals, respectively, in first and second multipliers responsive to received ones of the unweighted outputs of the first and second model functions and the first and second weighting signals; and
- providing a feedback signal to respective inputs of the first and second model functions responsive to the first and second weighted output signals of the first and second multipliers, wherein the feedback signal is based on a convex sum of a weighted estimate and a weighted covariance.